

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals and Interferences

In re Patent Application of

ANDREWS

Serial No. 09/707,886

Filed: November 8, 2000

Title: MOLD PART GUIDE MECHANISM

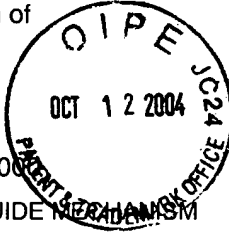
Atty Dkt. 3700-2

C# M#

TC/A.U.: 1722

Examiner: E. Luk

Date: October 12, 2004



AF
Iw

Mail Stop Appeal Brief - Patents

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

☐ **Correspondence Address Indication Form Attached.**

☐ **NOTICE OF APPEAL**

Applicant hereby **appeals** to the Board of Patent Appeals and Interferences from the last decision of the Examiner twice/finally rejecting (\$340.00) applicant's claim(s).

\$

☒ An appeal **BRIEF** is attached in the pending appeal of the above-identified application (\$ 340.00) \$ 340.00

☒ Credit for fees paid in prior appeal without decision on merits. (*Previous Appeal Brief fee paid January 20, 2004*) $-\$ (165.00)$

☒ A reply brief is attached in triplicate under Rule 41.41 (no fee)

☐ Petition is hereby made to extend the current due date so as to cover the filing date of this paper and attachment(s) (\$110.00/1 month; \$430.00/2 months; \$980.00/3 months; \$1530.00/4 months) \$
SUBTOTAL \$ 175.00

☒ Applicant claims "Small entity" status, enter 1/2 of subtotal and subtract $-\$ (170.00)$
☐ "Small entity" statement attached.

SUBTOTAL \$ 5.00

Less month extension previously paid on $-\$ (0.00)$

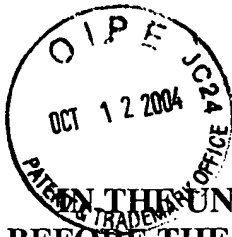
TOTAL FEE ENCLOSED \$ 5.00

Any future submission requiring an extension of time is hereby stated to include a petition for such time extension. The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our **Account No. 14-1140**. A duplicate copy of this sheet is attached.

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By Atty: Stanley C. Spooner, Reg. No. 27,393

Signature: _____



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

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For: MOLD PART GUIDE MECHANISM

APPEAL BRIEF

On Appeal From Group Art Unit 1722

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TABLE OF CONTENTS

| | |
|---|----|
| I. REAL PARTY IN INTEREST | 1 |
| II. RELATED APPEALS AND INTERFERENCES..... | 2 |
| III. STATUS OF CLAIMS | 2 |
| IV. STATUS OF AMENDMENTS..... | 2 |
| V. SUMMARY OF THE INVENTION | 2 |
| VI. ISSUES..... | 5 |
| VII. GROUPING OF CLAIMS | 5 |
| VIII. ARGUMENT | 5 |
| 1. Discussion of the References | 5 |
| 2. Discussion of the Rejections | 8 |
| 3. The Errors in the Second Non-Final Rejection | 9 |
| (a) No cited reference teaches one structure sandwiching at least a portion of another structure | 10 |
| (b) No cited reference teaches the application of preload pressure to the bearings in a direction normal to the mold movement path | 11 |
| (c) There is no suggestion or motivation to modify Zakich | 13 |
| (d) There is no suggestion or motivation to combine Zakich with Ueno | 14 |
| IX. CONCLUSION | 15 |
| APPENDIX A..... | 17 |

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APPEAL BRIEF

Sir:

I. REAL PARTY IN INTEREST

The real party in interest in the above-identified appeal is Hammonton
Mold Co. Inc. by virtue of an Assignment from the inventor submitted for
recording on November 8, 2000 and recorded at Reel 14749, Frame 113.

Adjustment date: 10/13/2004 CNGUYEN
01/22/2004 MDANTE1 00000084 09707886
01 FC:2402 -165.00 OP

10/13/2004 CNGUYEN 00000096 09707886
01 FC:2402 170.00 OP

II. RELATED APPEALS AND INTERFERENCES

This is the second Appeal and Appeal Brief filed in this application. A previous Appeal Brief was filed on January 20, 2004 in response to the second non-final rejection of the non-amended claims.

III. STATUS OF CLAIMS

Claims 1-28 are pending in the application. Claims 14-28 were previously allowed, but at present only claims 18-28 have been allowed. Previously claims 1-13 were variously rejected and now claims 1-17 are rejected.

IV. STATUS OF AMENDMENTS

No claim amendments have been submitted in response to any of the three non-final Official Actions in this case.

V. SUMMARY OF THE INVENTION

The present invention relates to multi-piece molds and specifically relates to guide mechanisms for ensuring precise placement of mold parts.

Multi-piece molds for forming molded products, and in particular injection blow molded products, are well known. The molten material comprising the substance of the material to be molded is placed on the end of a blow molding tube (this is called a "parison"). The parison is located within the mold area and the

portions of the mold are moved together around the parison. High pressure air is then provided which expands the material into the limits of the mold recesses whereupon, after suitable cooling, the mold halves are separated and the blow molded product removed.

In many blow molded products there are recessed bottoms on the molded product making it difficult, if not impossible, to separate the mold halves without damage to the molded part. In such systems a third mold part identified as a bottom end plug is also utilized. The bottom end plug is slid into the mold forming position and, after the blow molding is completed, can be retracted so that any protrusion on the end plug (used to form the inner curvature of the bottom of the blow molded product) does not obstruct removal or otherwise damage the product when the upper and lower mold portions are separated and the product removed.

In the situation in which the mold portions do not fit perfectly together, an unsightly mold seam is formed on the molded product. In order to avoid forming mold seam lines in the molded product, it is required that the edges of the mold portions fit together very precisely. Wear between the mold parts and/or the guide structures, results in undesirable parting lines being formed on the molded product. Because of the industrial setting, the lubricated surfaces of the mold halves and the bottom end plug become contaminated and wear. In as few as 10-20,000 mold cycles, the bottom end plug mount surfaces wear sufficiently (due

to wear and "slop" in the guide structure) that the bottom end plug does not precisely fit the mold, with the result that part lines are created in the bottom of the blow molded product. Even if the sliding surfaces are protected by seals and/or protective boots, unacceptable wear occurs after 40-60,000 cycles.

Appellant found that improved mold life could be achieved by providing a very specific guide mechanism for guiding at least one movable mold part into and out of position with the other mold part. Appellant found that where one of the guide structures upon which one of the mold parts is fixed is sandwiched between two structures of the other guide structure and relative movement is facilitated by bearings, if one of the structures is adapted to apply a preload pressure to the mold bearings in a direction normal to the mold movement path, then an operating life of greater than 1 million cycles was possible, greatly increasing not only the life of conventional mold systems, but also the accuracy of mold location (and the consequent diminution of seam lines in the molded product).

Thus, the present invention is characterized in a mold for forming molded products wherein there are at least two mold parts and there is a guide mechanism for moving at least one movable mold part into and out of position with the other mold part, where the guide mechanism comprises **"a first structure"; "a second structure"** wherein one of these structures **"sandwiches at least a portion of the other of said first and second structures"; "a plurality of bearings separating said first and second structures"** wherein **"one of said first and second**

structures applies a preload pressure to said bearings in at least one direction normal to said mold movement path."

VI. ISSUES

Whether claims 1-17 are indefinite under 35 USC §112(second paragraph).

Whether claims 1-5 and 9-11 are anticipated under 35 USC §102 over Zakich (U.S. Patent 5,091,124).

Whether claims 6-8, 12, 14, 15 and 17 are obvious under 35 USC §103 as unpatentable over Zakich in view of Ueno (U.S. Patent 4,984,980).

VII. GROUPING OF CLAIMS

The rejected claims stand or fall together based upon the patentability of independent claims 1 and 14..

VIII. ARGUMENT

1. Discussion of the References

Zakich (U.S. Patent 5,091,124) teaches a high tonnage reaction injection molding (RIM) press which has a fixed platen 12 and a movable platen 22. Guide bars 24 are provided on either side of the movable platen to guide its movement vertically. The Examiner alleges that some portion of first structure 24 and some portion of second structure 13 have a relationship in which the first structure

sandwiches the second structure. However, an examination of the drawings in Zakich does not appear to indicate any such “sandwiching” arrangement.

Additionally, the Examiner suggests that Zakich teaches a “plurality of bearings (28)” and yet a reference to the Zakich patent at column 8, lines 7-8 indicates that item 28 is “semicylindrical recesses 27 serrated at 28 to mate and interlock with the associated rods 24.” There is no indication that the recesses and especially the serrated recesses 28, comprise any sort of bearing, let alone a plurality of bearings which separate the structures.

The Examiner admits on page 4 of the Official Action that “Zakich fails to teach a cam surface, a return spring, ball bearings, injection blow molding and upper and lower bearing races.” The admission on page 4 seems to contradict the Examiner’s contention that Zakich teaches “a plurality of bearings (28)” on page 3 of the Official Action and yet admits that Zakich fails to teach “ball bearings” on page 4 of the Official Action.

In addition to failing to teach that one structure sandwiches another structure, the Zakich structure suggests that both mold parts move vertically towards and away from each other. There is no suggestion that the rollers bearings supporting and permitting movement of the mold halves have any preload in a direction normal to the vertical mold movement. The Examiner has not suggested that Zakich has any teaching, nor can such a teaching be found

within the Zakich reference. Moreover, there is no indication that Zakich is directed to the problem solved by Appellant's claimed combination of elements.

Ueno (U.S. Patent 4,984,980) teaches a mold clamping apparatus for a molding machine. As disclosed in Figure 2, a movable platen 16 and a fixed platen 8 hold movable mold part 20 and fixed mold part 9. Mold part 20 can be moved towards fixed mold part 9 by the action of the threads and jack screw arrangement disclosed. As can be seen in Figure 4, a conventional recirculating ball jack screw arrangement is utilized to force movable platen 16 towards fixed platen 8, thereby causing the movable mold to be clamped into position on the fixed mold 9.

The Examiner's suggestion that Ueno somehow teaches a guide mechanism which has a first structure sandwiching another structure and a plurality of bearings therebetween permitting movement along the mold movement path is simply not present in the Ueno reference. The Examiner makes no statements suggesting that these structures are even present in the Ueno reference.

In addition to failing to suggest that any structure of a guide mechanism sandwiches another structure, the Ueno structure suggests that both mold parts move horizontally towards and away from each other. There is no suggestion that the rollers or bearings supporting and permitting the transverse movement of the platens which support the mold halves have any preload in a direction normal to

the mold movement path. The Examiner has not suggested that Ueno has any such teaching, nor can such a teaching be found within the Ueno reference.

2. Discussion of the Rejections

Claims 1-17 stand rejected as being indefinite under 35 USC §112(2nd paragraph). To the extent it is understood, this rejection is similar to the rejection in the first non-final action mailed July 31, 2002. However, this rejection was withdrawn in the second non-final action mailed May 19, 2003, even though no claim amendments were made. The rejection has been reinstated even though no claim amendments have been made in the interim between the second and third non-final official actions.

Claims 1-5 and 9-11 stand rejected under 35 USC §102 as being unpatentable over Zakich. To the extent the Examiner's anticipation rejection is understood, he appears to believe that Zakich teaches all structures required by Appellant's independent claims 1 and 14. However, as noted above, the Examiner's suggestion that Zakich teaches "a plurality of bearings (28)" is opposed by the Examiner's further statement and admission on page 4 that "Zakich fails to teach . . . ball bearings" Moreover, while the Examiner alleges that Zakich teaches the claimed combination of structural elements in which one structure "sandwiches at least a portion" of another structure, this orientation is not seen in the Zakich reference.

Claims 6-8, 12, 14, 15 and 17 stand rejected under 35 USC §103 as being unpatentable over Zakich further in view of Ueno. In the obviousness rejection, the Examiner repeats verbatim his contention that Zakich teaches all elements of Appellant's claims 1-5 and 9-11, then admits that Zakich fails to teach a number of claimed items, but then suggests that Ueno teaches a number of common elements, none of which are the recited structures admitted to be missing from the Zakich reference. Additionally, at least to the extent the rejection is understood, the Examiner appears to ignore the requirement to provide some motivation or reason for combining elements of the two references, even if they could be combined.

3. The Errors in the Second Non-Final Rejection

There are at least four significant errors in the second non-Final Rejection and they are summarized as follows:

- (a) No cited reference teaches one structure sandwiching at least a portion of another structure;
- (b) No cited reference teaches the application of preload pressure to the bearings in a direction normal to the mold movement path;
- (c) There is no suggestion or motivation to modify Zakich; and
- (d) There is no suggestion or motivation to combine Zakich with Ueno.

(a) No cited reference teaches one structure sandwiching at least a portion of another structure

Claim 1, from which claims 2-13 depend, recites a structural interrelationship which is simply not present in any prior art reference. The claim specifies that "one of said first and second structures sandwiches at least a portion of the other of said first and second structures." The interrelationship of "sandwiching" is well known in the art and means that the "one structure" is on opposite sides of at least a portion of the "another structure"

While the Examiner alleges in his anticipation rejection and his obviousness rejection that Zakich teaches "the first structure sandwiching the second structure" (page 2 and page 3 of the Official Action), there is no such disclosure identified in Zakich. The first structure identified by the Examiner is item 24 which are the vertical guide posts fixed to the bottom and fixed structure. There is no structure sandwiching item 24. Item 13 is a second structure which moves vertically as well and is guided by the guide post, but it certainly doesn't sandwich the guide posts.

The same analysis is true with respect to the Ueno reference. While the mold movement in Ueno is horizontal rather than vertical, there is no guide mechanism which has a first structure, a second structure where one of the structures sandwiches the other of the structures. Again, the Examiner refers to a recirculating ball arrangement in Ueno which utilizes ball bearings 22. However,

there is no disclosure that these bearings permit movement along the mold movement path.

Since neither reference teaches this positively claimed structural interrelationship, the rejection of this structural interrelationship as being anticipated or obvious in view of the cited prior art clearly fails.

The Patent Office has the burden under 35 USC §102 of establishing that all claimed elements are present in one reference and under 35 USC §103 that all elements are disclosed in at least one of several cited references. The Examiner fails to point out where the claimed sandwiching structure of the guide mechanism is located

(b) No cited reference teaches the application of preload pressure to the bearings in a direction normal to the mold movement path

Appellant's independent claim 1 also recites a structural characteristic which states "wherein one of said first and second structures applies a preload pressure to said bearings in at least one direction normal to said mold movement path." The Examiner has completely ignored this structural characteristic and nowhere has he represented that Zakich or Ueno contain any such teaching.

While the Examiner admits that Zakich fails to teach "ball bearings" on page 4 of the Official Action, on page 3 he alleges that Zakich does teach a "plurality of bearings (28)," but in fact a review of the Zakich reference indicates that these are not bearings at all and merely part of the dogging mechanism which

applies pressure to hold the movable top mold down against and in conjunction with the fixed lower mold. The Examiner's admissions with respect to structures not present and/or not taught by the Zakich reference is appreciated.

The Examiner makes no representation that Zakich teaches the claimed structural interrelationship, i.e., bearings separating the first and second guide mechanism structures, where one of the structures applies a preload pressure to the bearings in at least one direction "normal to said mold movement path." There are no bearings shown in Zakich and in Ueno the bearings are only shown in the recirculating ball arrangement. There is no disclosure that those recirculating ball bearings have any preload applied to them, let alone a preload applied in "at least one direction normal to said mold movement path." The Examiner has ignored the above-recited limitations in Appellant's independent claims and just assumed that because Zakich and Ueno teach mold clamping structures, they somehow inherently render obvious this structural interrelationship. This is simply not present in these references.

Of course, as can be seen in Appellant's drawings, in one embodiment it is the belleville washers 46 which provide the desired preloading of the bearings by sandwiching the first structure between elements of the second structure. This is clearly discussed in Appellant's specification page 6, lines 4-8. This preload mechanism serves to accurately orient the relative position of the mold parts.

Again, because the burden is on the Patent Office to establish a *prima facie* case of obviousness, concurrent with that burden is the requirement that the Patent Office demonstrate that claimed structures and structural interrelationships be shown in at least one of the references. A structure for preloading the bearings and in particular preloading them in a direction normal to the mold movement path is simply not present in either Zakich or Ueno.

Therefore, the Examiner has failed to meet his burden of establishing a *prima facie* case of obviousness under 35 USC §103.

(c) There is no suggestion or motivation to modify Zakich

While the Examiner concludes that it would have been obvious to one of ordinary skill in the art to modify Zakich, he reaches this conclusion without any support or teaching in the record to date. The Court of Appeals for the Federal Circuit has consistently stated that

"to prevent the use of hindsight based on the invention to defeat patentability of the invention, this court **requires** the examiner to show a motivation to combine the references that create the case of obviousness. In other words, **the Examiner must show reasons** that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed." (emphasis added).

In re Rouffet, 47 USPQ2d 1453, 1457-8 (Fed. Cir. 1998).

The Examiner has provided no reason or motivation for modifying Zakich, other than to say that the resultant modification has a benefit, and this benefit somehow motivates the modification. This is 20/20 hindsight reasoning and could be applied to any inventive combination, i.e. because the combination has a benefit, all combinations would be obvious in view of that benefit. This is simply not the test of obviousness under 35 USC §103 and the Examiner has failed to provide the required motivation for the modification of the Zakich reference.

(d) There is no suggestion or motivation to combine Zakich with Ueno

The Examiner admits that Zakich "fails to teach a cam surface, a return spring, ball bearings, injection blow molding and upper and lower bearing races." However, the Examiner suggests that Ueno teaches these missing elements and that it would be obvious to somehow combine the two references. Again, this is a situation in which the Examiner is taking Appellant's claimed invention and using this as a roadmap to pick and choose elements from the Zakich and Ueno references (and disregarding other elements and claimed interrelationships) in an attempt to suggest Appellant's claims are obvious.

As noted above, the burden on the Examiner is to establish some reason or motivation for combining the references, without resort to Appellant's invention. The Examiner suggests that it would be obvious to modify Zakich with the teaching of the Ueno reference because the end result allows for "improved

movement between the first and second structures and thus improved movement of the moveable mold towards and away from the fixed mold." While the Examiner's sentence structure is somewhat strained, Appellant understands the Examiner to be indicating that the beneficial combination of Appellant's claimed elements is the motivation for combining those elements in the claimed fashion.

Again, as above, this is 20/20 hindsight reasoning which is prohibited by the Court of Appeals for the Federal Circuit. Should the Examiner believe that either Zakich or Ueno contain any suggestion or motivation for combining those references, he is respectfully requested to point this out in the Examiner's Answer. Absent such a motivation, the claims are clearly non-obvious in view of the prior art.

IX. CONCLUSION

As noted above, claimed structures from Appellant's independent claim 1 are simply missing from all prior art references. The Examiner fails to identify any structure in either Zakich or Ueno that teaches any "sandwiching" structure as claimed in the independent claims. The Examiner fails to point out where either reference teaches applying a preload pressure to the bearings which permit mold movement in the normal direction. The Examiner has failed to meet his burden of providing a reason or motivation for either modifying the Zakich reference by itself or for combining the Zakich and Ueno references. Any one of the above

ANDREWS
Serial No. 09/707,886

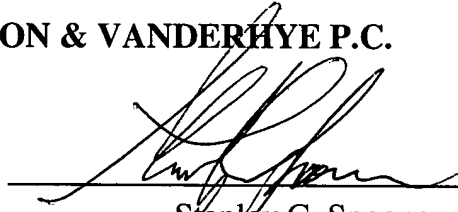
lapses on the Examiner's part voids the rejections under 35 USC §102 or 35 USC §103. The failure to teach all four clearly establishes that Appellant's claims are patentable over the Zakich and Ueno combination.

In view of the above, the rejection of independent claims 1 and 14 and claims 2-13 and 15-17 dependent thereon, respectively, is clearly in error and reversal thereof by this Honorable Board is respectfully requested.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____


Stanley C. Spooner
Reg. No. 27,393

SCS:kmm
Enclosures
Appendix A - Claims on Appeal

APPENDIX A

Claims on Appeal

1. A mold for forming molded products, said mold comprising:

at least two mold parts, at least one of said at least two mold parts moveable along a mold movement path with respect to the other of said at least two mold parts; and

a guide mechanism for guiding said at least one moveable mold part into and out of a mold forming position along said mold movement path in conjunction with the at least one other mold part, wherein said guide mechanism comprises:

a first structure fixed to said at least one other mold part;

a second structure fixed to said at least one moveable mold part, wherein one of said first and second structures sandwiches at least a portion of the other of said first and second structures; and

a plurality of bearings separating said first and second structures and permitting movement along said mold movement path wherein said one of said first and second structures applies a preload pressure to said bearings in at least one direction normal to said mold movement path.
2. The mold according to claim 1, wherein said mold movement path is a linear mold movement direction.

3. The mold according to claim 1, further including a means for moving said at least one moveable mold part into said mold forming position.

4. The mold according to claim 1, further including a means for returning said at least one moveable mold part away from said mold forming position.

5. The mold according to claim 3, wherein said mold includes an additional moving structure and said means for moving comprises a cam surface in conjunction with said at least one moveable mold part, said cam surface contacted by said moving structure and biasing said at least one moveable mold part into said mold forming position.

6. The mold according to claim 4, wherein said means for returning comprises a return spring biasing said at least one moveable mold part out of said mold forming position.

7. The mold according to claim 5, wherein said cam surface is planar.

8. The mold according to claim 5, wherein said cam surface is curved.

9. The mold according to claim 1, wherein said at least one other mold part is fixed and said first structure is fixed to said fixed mold part.

10. The mold according to claim 9, wherein said first structure is sandwiched between portions of said second structure.

11. The mold according to claim 2, wherein said plurality of bearing limit movement of said moveable mold part only to movement along said mold movement direction.

12. The mold according to claim 2, wherein a portion of said plurality of bearings are comprised of ball bearings and said first and second structures have at least two opposing surfaces into which corresponding ball bearing races are formed, said races extending in said mold movement direction.

13. The mold according to claim 1, wherein said mold comprises three mold parts, a top half, a bottom half and an end plug, wherein said at least one moveable mold part comprises said bottom end plug.

14. A mold for forming molded products, said mold comprising:
- at least three mold parts, at least one of said at least three mold parts moveable along a mold movement direction with respect to at least one of the others of said at least three mold parts;
 - a guide mechanism for guiding said at least one moveable mold part into and out of a mold forming position along said mold movement direction in conjunction with the at least two other mold parts, wherein said guide mechanism comprises:
 - a first structure fixed to one of said at least two other mold parts;
 - a second structure fixed to said at least one moveable mold part, wherein one of said first and second structures sandwiches at least a portion of the other of said first and second structures; and
 - a plurality of bearings separating said first and second structures and permitting movement in said mold movement direction;
 - at least one spring applying a preload pressure to said bearings in at least one direction normal to said mold movement direction:
 - a return spring for biasing said at least one moveable mold part in one of said directions towards and away from said mold forming position; and
 - a cam for moving said at least one moveable mold part, in opposition to said return spring bias, to the other of said directions away from or towards said mold forming position.

15. The mold according to claim 14, wherein said mold is an injection blow molding mold.

16. The mold according to claim 14, wherein said moveable mold part is a bottom end plug for an injection blow molded mold and said others of said at least three mold parts comprise a moveable upper mold half and a fixed lower mold half.

17. The mold according to claim 14, wherein said guide structure is comprised of upper and lower bearing races, each of said bearing races formed by surfaces in each of said first and second structures, said bearing race surfaces sandwiching respective bearings